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AUTHOR Hollenbeck, A. R.; And Others
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ABSTRACT

The deleterious effects of separation and deprivation using children who were undergoing chemotherapy for childhood cancer was investigated. Extensive observational and physiological records were obtained on four children under five years of age during six weeks of treatment in a protected environment. In general, findings parallel those reported in the subhuman primate literature with the children's behavior following a descriptive sequence of agitation followed by behavioral depression. Results suggest that the seriousness of maternal separation for young children and the need to identify patterns of functional and dysfunctional behaviors have direct implications for intervention strategies. (Author)

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Children with Serious Illness:

Behavioral Correlates of Separation and Isolation

A.R. Hollenbeck, E.J. Susman, E.D. Nannis, B.E. Strope, S.P. Hersh

National Institute of Mental Health

and

A.S. Levine, P.A. Pizzo

National Cancer Institute

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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The effect of mother-child separation, followed by isolation and subsequent deprivation, on the psychological development of children has been of long standing concern. The deleterious effects of separation on later development of young children has been extensively documented (e.g., Robertson and Robertson, 1971; Spitz, 1946a, 1946b). Young children admitted to institutional care respond with acute distress followed by a slow process of adaptation to the new environment. The distress associated with institutional care is assumed to be a response of young children to separation from the primary object of attachment, usually the child's mother (Bowlby, 1960 and 1961). The separation distress response has been discussed from at least three theoretical perspectives. Psychoanalytic theory posits that the child becomes cathected to mother in the pursuit of gratification of biological needs. Removal of the object of gratification leads to distress in the child. From the fields of ethology and animal behavior comes the notion that attachment is not formed through learning but through instinctual behavior patterns of the infant, such as sucking and clinging, that become focused on the mother and constitute the infant's attachment to her (Bowlby, 1957). Learning theorists posit that attachment and subsequent separation distress is not a phenomenon that is separate from other phenomena but that an analysis of attachment would proceed in the same way as would investigations of all classes of behavior, that is, by determining discriminative and reinforcing stimuli in the environment (Gewirtz, 1959). In all three approaches, there exists either implicitly or explicitly the notion that deprivation, either emotional or sensory, is a concomitant of separation. Deprivation has occupied a central role in formulations relating

early childhood deficiency conditions to aberrations in later social and emotional development.

Prospective studies on the effects of separation and isolation in humans have not been available for obvious ethical reasons. However, we were afforded the unique opportunity to do a prospective study of deprivation, using children who were undergoing chemotherapy for childhood cancer. Three bovs and one girl ranging in age from 18 months to 4 years were research participants. The children in our sample were children with metastatic solid tumors and lymphomas that failed to respond to conventional therapy. The prognosis for all these children was poor.

As part of a National Cancer Institute research protocol children were assigned to receive chemotherapy in a germ-free protected Laminar Air Flow room. The purpose of LAF rooms is to reduce the incidence of infection; a potentially life-threatening complication secondary to the immuno-suppressive effects of chemotherapy. Protected environments are currently an adjunct to the treatment of cancer in a limited number of institutions.

Although protected environments constitute an extreme form of isolation, they do provide a setting for studying a class of problems generic to the hospital care of children with less severe forms of illness (e.g., infectious diseases. A protected environment isolates a child from most physical contact thus depriving the child of sensory stimulation and emotional support. While in the Laminar Air Flow Room the only physical contact these children have with others is through plastic gloves (Slide 1) and anyone entering the room must be attired in a sterile gown (Slide 2). Family members can go in the room or visit through the curtain (Slides, 3, 4, 5). As you can see, the conditions of isolation

are extreme for children in protected environments, however, studying the significance of isolation in this setting can provide important basic knowledge about the effects of isolation, in general.

In addition to effects of the setting, the illness itself represents an experience that is accompanied by physical distress and psychological trauma. The life-threatening nature of cancer undoubtedly heightens the psychological consequences of the disease. The child also may experience pain as a concomitant of either the disease or treatments. Thus, a child with cancer experiences a high degree of trauma from the illness itself and the separation imposed by this form of treatment.

Our data were collected naturalistically by videotaping each child four days per week--once in the morning and once in the afternoon for up to six weeks. Tapes were then scored by trained observers who had reached a previously agreed upon standard of agreement. A predetermined set of coding categories were used. In addition, physiological measures of body temperature, heart rate, respiration, and blood pressure were made four times a day.

The next two slides (Slides 6 and 7) graphically display summary behavioral data from two of our children as an example of our data. These measures are based on over 2,000 behavior changes per child. The amount of behavioral output (the total number of behavior changes) and the variability of behavior (the number of unique behaviors, labeled here as complex) rose during the first few weeks of treatment then declined during later weeks of treatment. During this phase, children were generally physically active and engaged in a variety of vocal behaviors, such as crying and talking; play remained relatively constant throughout the isolation period. Passivity gradually increased during isolation

and then declined after discharge from the Flow room. The increases and decreases in particular behaviors do not appear to coincide with particular aspects of the medical treatment.

The next slide (Slide 8) shows body temperature data illustrated for one child. Of particular interest is that temperature appears to drop well below normal in the first 24 hours after hospitalization, a pattern also observable in infant monkeys separated from their mothers.. High temperatures during the remaining period of confinement were a result of chemotherapy. Data for the other children are similar.

The next slide (Slide 9) illustrates the mean percentages for each individual behavior category across all observations for each child. Multiple regression analyses and subsequent ANOVA's were used to determine mean levels of differences in a single subject design. Notice the significantly higher level of the passive category for each child. One-third to one-half of the time these children were observed their behavior was scored as passive. The next slide further illustrates the qualitative effects of this finding. This slide (Slide 10) is of an infant monkey after separation from its mother. Pay particular attention to the infant's posture and lack of affect in the facial expression indicating a behavioral depression. In this contrasting slide (Slide 11) of one of our children, notice how similar the child's spinal curvature and expression is to the monkeys. Although the circumstances vary greatly, it would appear that the behavioral consequences of separation at a young age may not be species specific.

The closest analogue to the present situation is the recent work of Reite (1977a, 1977b). Reite observed pigtail infant monkeys separated from their mothers. Clinical and behavioral measures were recorded during several days of separation and subsequent reunion with the mother. Two findings are of particular relevance. First, changes in clinical measures were maximal early in the period of separation while changes in behavioral activity were maximal later in the period. Secondly, both behavioral and clinical measures of heart rate and body temperature showed marked increases above baseline immediately after separation. However, within 24 hours the clinical measures showed marked decreases below baseline.

In general, the children's behavior trends support Reite's primate data and his notion of an agitation-depression syndrome. While these data differ from the primate findings in terms of their exact timing, they nevertheless follow a descriptive sequence of agitation followed by depression. The parallel finding for body temperature underscores the seriousness of maternal separation. However, the relation between physiological and behvioral indices needs further exploration. From future analyses we hope to identify patterns of functional vs. dysfunctional behaviors which have direct implications for intervention strategies. In a previous session at these meetings my colleague, Dr. Susman (1978) presented our theoretical model for guiding research in this new area. To date, the effects of separation, isolation and illness appear to be more extreme in younger children possibly because they have not developed strategies to cope with these situations. Learning the processes involved in developing such strategies would prove invaluable in providing appropriate age-related psychological supports.

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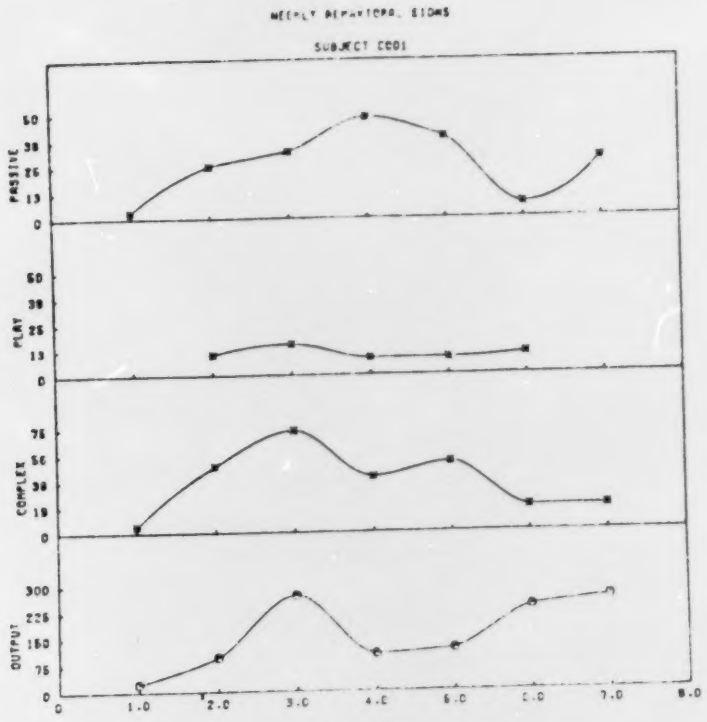
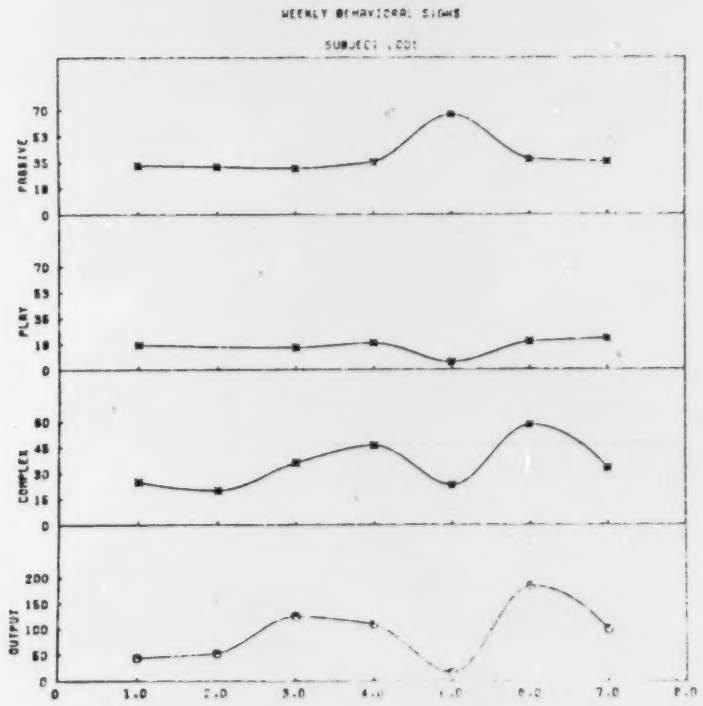
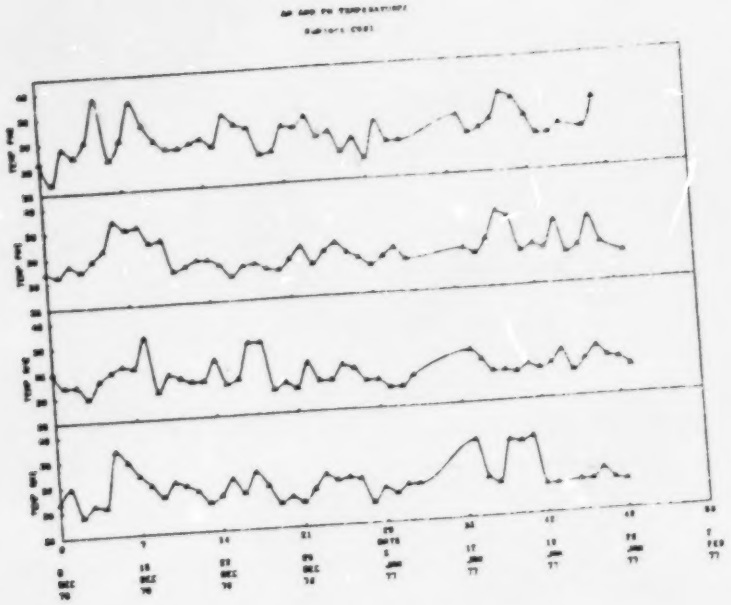
STERILE



SLIDE 6



SLIDE 7



SLIDE 8

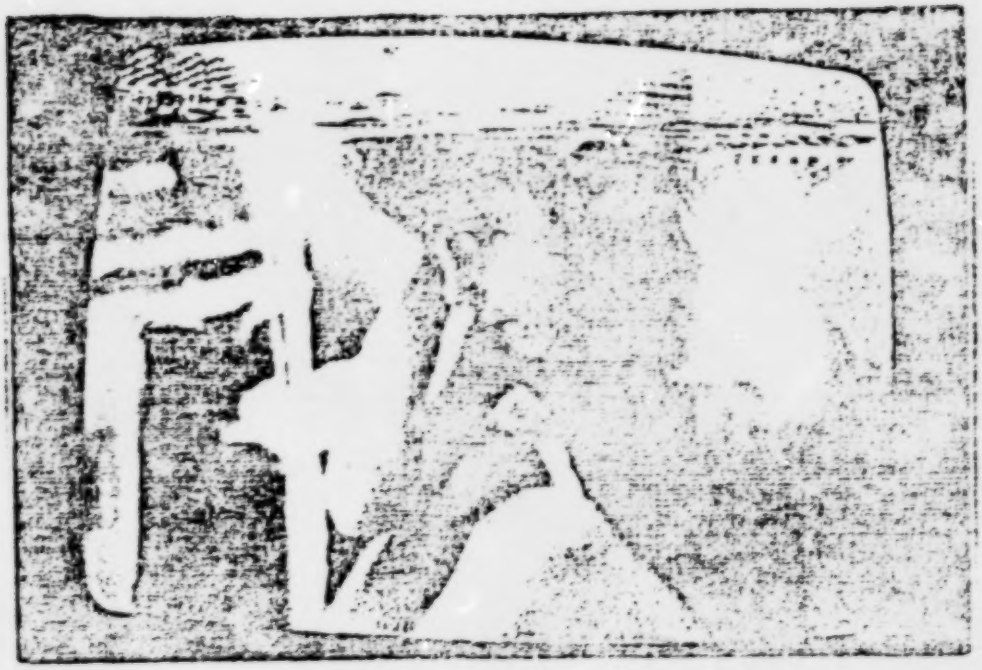
MEAN PERCENTAGES
50
40
30
20
10
PLAY
SLEEP
PASSIVE
PHYSICAL
VOCAL
PROTEST
C00 1
L00 1
P00 1
M001
BEHAVIOR CATEGORIES FOR SUBJECTS C00 1 TO M00 1

18

19

20

21



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